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Expected job loss in East Germany shortly before German unification

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Expected Job Loss in East Germany Shortly Before German Unification

by

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ABSTRACT

We investigate expectations concerning future job loss in the former German Democratic Republic shortly before the economic, monetary and social union in July 1990. In order to model these expectations, we take detailed account of individual heterogeneity, the availability and interpretation of information, and the economic and social environment of the individual. Our data base is the Socio-Economic Panel (SOEP) East. We find that, with some exceptions, East Germans hold expectations comparable to those held by individuals having experienced a market economy, which is surprising given the lack of such an economy in the previous German Democratic Republic.

Since these expectations are only observed ordinally, an adequate estimation method is the ordinal logit model. The corresponding stochastic assumptions are tested extensively using pseudo-Lagrange multiplier tests against omitted variables, non-linearity, asymmetry of distribution and heteroscedasticity. Furthermore, we apply Hausman tests to check the validity of the classification of the endogenous variable.

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1 Introduction

In June 1990 the ultimate demise of the East German economic system was apparent. The substitution of the East German socialist political system through the West German democratic system was clearly obvious and acknowledged by East Germans through various elections. This development, however, was not shared by the economic system. Since markets had not been formed yet, prices contained nearly no information concerning the scarcity of goods and labour. Stock markets did not exist. In addition, the labour market in former East Germany was characterised by peculiar factors. Since jobs were guaranteed by the state, no official unemployment existed. Even at the time of our survey, the unemployment rate was negligible. The personal plight of being unemployed was an experience East Germans could only observe from their West German neighbours.

We present a cross-sectional analysis of expectations on job security in former East Germany, shortly before the economic, monetary and social union (EMSU) on July 1, taking a detailed account of individual heterogeneity, the availability and interpretation of information and the economic and social environment of the individual.[1] The extent of the economic structural change and the subsequent increase or reduction of jobs in the next two years in former East Germany is a topic heavily discussed in the media and by experts in economics and other social sciences (see for example Sinn and Sinn, 1991). Because of the unique character of the revolutionary transformation occurring in East Germany and the lack of experience with a market economy in June 1990, we suppose that workers' expectations did not result from a tightly specified microeconomic model of firms' labour demand in combination with a macroeconomic model of unemployment. Reliable forecasts of the macro effects were hardly possible. Due to the lack of market experience, these expectations could not result from an extended learning process.

At the very beginning of the market economy we investigate the structure of expectations held by East German workers. It is this uniqueness, that allows a static modelling and an empirical analysis which is based on a single cross-section, although in general expectations have to be modelled in a dynamic context. The question whether East Germans, having had no experience in a market economy, have "rational" expectations is of interest. In this context the term "rational" means that expectations are formed as if using the concept of a market economy. The more interesting question concerning the individual realization of these expectations can only be analysed once the second or third wave of the panel become available.

Expectations are oriented towards future events that are only partly, if at all, controlled by the individual. Hypotheses on the formation of expectations and their implications for macroeconomic problems have been analysed in numerous theoretical and empirical studies (see Holden, Peel and Thompson ,1985, and Lovell ,1986, for a summary and for criticisms). Individual-based approaches on the formation of expectations are sparse

1 Preliminary results are contained in Lechner, Pfeiffer and Wagner (1991).

in the economic literature. Low et al. (1990) for example use the static famework, estimated by an ordered probit, to model expectations with respect to output and unemployment realizations of firms (Ivaldi, 1991, gives a survey of available methods in this field).

Our analysis of workers' expectations is important for economic policy since expectations may affect e.g. consumption and, more important, migration patterns to West Germany and thus economic development (see also Akerlof et al. 1991). Unfortunately, migration to the West cannot be investigated with this data set since only about 20 households indicate that at least one member planned to move to West Germany.

Our data set, the East German survey of the Socio-Economic-Panel (SOEP) of 1990, provides detailed information on various economic and socio-demographic characteristics of households and individuals. Although most of the survey questions are not specific to East Germany and have been part of the SOEP-West, there are no comparable econometric studies. Since the West German political and economic systems have been much more stable and were not shocked in the same way, an interesting exercise is to compare basically the same static models across both parts of Germany. The West Germans had ample time to learn about job security in the market economy: the East Germans had not. We specified essentially the same static model about future job expectations of West German workers and presented the results in Lechner et al. (1991). Clearly, this should be done in a dynamic context, and our analysis shows that the static model for West Germany is rejected while the model for East Germany is not.

In the econometric part of this paper, we present specification tests designed for the ordered logit model. Although the estimates of these types of models are very sensitive to a violation of the underlying stochastic assumptions and make testing a necessity, the suggested procedures have not been applied to ordered probit and logit models in the literature. Practitioners in this field of study will find useful instruments to test whether their models are misspecified.

Section 2 introduces the formulation of a simple but very flexible model. Section 3 describes the East German survey of the SOEP and discusses our sample as well as the observed variables. In Section 4 we present the methods of estimation and inference, while Section 5 examines the estimation and test results. The conclusions are drawn in Section 6.

2 A Simple Model of Workers' Expectations in East Germany

When attempting to model the expectations of East Germans we have to keep in mind that we are observing the *starting* point of a dynamic process; hence a static model is adequate. We propose that the expectations concerning job lay-offs can be modelled as:

$$E_i = W_i(X_{1i}, X_{2i}, L_i, \beta_1, \beta_2, \gamma, u_i) \qquad i = 1,\ldots,N. \tag{2.1}$$

E_i is the expectation of the individual i, a variable which has to be explained and is usually observed only ordinally. The explaining components are divided into four groups: X_{1i}, X_{2i}, L_i and u_i. The variable X_{1i} represents factors of the present and future economic situation of the firm and sector in which individual i is employed. In addition to these firm-specific factors, other factors concern the sectoral development and the environmental situation. X_{2i} includes information on the individual's present position in the firm and possible future career prospects; these are human capital factors. L_i depicts the effect of the individual's outlook on life and the public mood. β_1, β_2 and γ are coefficient vectors. u_i is an unobserved component of the flow of information or of the individual's outlook on life due to unobservable personality traits (e.g. unobservable pessimism or STASI membership).

To test this model in its empirical form, we assume the following linear form of W_i:

$$E_i = F_{1i}(X_{1i}, \beta_1) + F_{2i}(X_{2i}, \beta_2) + L_i\gamma + u_i \qquad i = 1,\ldots,N. \tag{2.2}$$

The F functions subsumes the influence of the capacity to obtain and interpret information, the possible costs of acquiring information or simply the process of selective perception. Psychological studies have shown that these factors are relevant (see for example van Raaij, 1989). Here we include, for example, such factors as education or the accessibility to telephones or West German media.

The general form allows us to consider the influence of different information sets in separate phases of life. Thus, the information the individual interprets can either result from specific access to information not shared by others (e.g., a manager will have different information on the firm than an unskilled worker) or from his or the group's interpretation of information (e.g. the information an individual selects from the information set depends on his level of education, social background or age). We describe F_{ji} through an additive indicator function $I(i,s)$, which equals one when the individual i has access to the information set $s \in (1,\ldots,S)$, that is:

$$F_{ji}(X_{ji}, \beta_j) = \sum_{k=1}^{K_j}\left(\sum_{s=1}^{S} I(i,s) X_{kji}\beta_{jks}\right) \qquad j = 1,2; i = 1,\ldots,N, \tag{2.3}$$

where K_j denotes the number of variables in X_{ij}. The indicator function in (2.3) allows the coefficients to vary across individuals. The hypothesis that the outlook on life and public mood (L_i) influence expectations linearly leads to the additive relation between F_i and L_i. Thus, in our formulation, the individual's perception of the economic environment does not depend on the outlook on life nor public opinion. Furthermore the influences in L are equal for all individuals. Although this model has due to the very nature of our problem various ad-hoc components, it will provide a useful framework and guideline for the following empirical analysis.

3 The Data

3.1 Expectations in the SOEP and the Selection of our Sample

The East German survey is the first wave of the SOEP for this part of Germany (see Schupp and Wagner 1990; see Projektgruppe Panel 1990 for the West German SOEP). 2179 households with 4453 members aged 16 and older were successfully interviewed. The collected data reflect sociological and economic fields of interest that are well suited for our study of expectations.

All working members of the household are asked the following question: "What are your future job expectations?" and, in a more detailed form, "Do you think that you will lose your job within the next two years?". The response categories are "definitely", "probably", "probably not" and "definitely not". 44.6% expected to lose their jobs definitely or probably (see Table 2 for the frequencies in our sample). For comparison: in 1989 only 3.7% West German workers expected to lose their jobs in the next two years.

We choose only individuals with German citizenship between the ages of 20 and 57 and exclude apprentices from our sample. In addition, we disregard those not regularly employed and the self-employed. First, workers who are not regularly employed value their work position differently than those employed full or part time. Second, the self-employed owner of a firm has more control over maintaining his position. In addition, the latter group is unimportant in the East for obvious political reasons. From the remaining 2910 observations we retain 2402 after deletion of missings.

The survey was accomplished in six weeks. However, with the East German transition, even a field time of six weeks (between end of May and the beginning of July) was still enough time for households to alter expectations. Since the interview date is recorded, the field date can be accounted for in our model.

3.2 The Explanatory Variables

In section 2 we specified four groups of variables, corresponding to X_1, X_2, L and the indicators. For the sake of brevity, we present only the most interesting variables in Table 1. A complete presentation of all variables used is available in Lechner et al. (1991).

The first group of variables X_1 concerns the firm's economic environment. We argue that East Germans based their expectations on differences between East and West Germany concerning the state of the environment, industrial sectors and firm size, i.e. East Germans expect the structure of their economy to eventually match the West German structure. OLDCAPT equals one if the average age of the capital stock in the East German industry is 50% older than in West Germany (estimated in Görzig and Gornig 1991, Table 3/2, S. 25). The older the existing capital stock is, the more likely the reduction in employment may be. Of the 13 industrial sectors identified in the

SOEP, 5 branches had an "old" capital stock in 1988. We have added the remaining sectors comparable to the one-digit level of the official statistic. The industrial sectors without the "old" capital stock serve as reference categories.

Görzig and Gornig (1991) also computed the sectoral employment in former East Germany in 1987 assuming West German relations (Table 5/1, S. 72). With the values on the realized sectoral employment in former East Germany, we obtain the future estimated increase/decrease in employment in percent and introduce two dummy variables for this information. The first indicate that employment will drop by more than 10% (mean: 0.541) and the second that employment will increase more than 10% (mean: 0.131).

Identifying the public service sector is partly arbitrary. Of the 8.55 million working in former East Germany, 6.83 million are employed in collectively owned firms.[2] To find out how those working classify themselves, the question: "Does your firm belong to the state apparatus or to the public service sector?" is asked and is recoded as CIVSERV here. Nearly one third aggreed.

The sizes of firms in former East and West Germany differ significantly. About 20.4% of those working in West Germany are employed in firms with less than 20 employees; in East Germany it is only 9.7%. We expect that the small firm sector (SMALL) promises above average growth in East Germany.

The variable LAYOFFS equals one if job reductions have been announced in the firm; FIRED indicates whether the individual is directly affected. The dummy variable TEMP can be described in the same way. If the individual is only temporarily employed, TEMP equals one.

Environmental pollution was a factor barely recognized in former East Germany. Through the economic union, West German pollution laws are now coming in force, resulting in higher costs that could ultimately lead to output and job reductions. HIPOLL equals one for 6 heavily polluted industrial branches based on information found in Bethkenhagen et al. (1988).

The position of the individual in the firm and his personal characteristics, denoted X_2, include age and sex (FEMALE). Older employees could fear losing their jobs because of their decreasing ability to work, learn and adapt. Adapting to western technology could prove to be too hard for some workers.

The notion of work being based on performance in the market economy is a concept East Germans may have learned from the media and used to evaluate the value of their human capital. ILL equals one for the state of health of individuals who, on a scale of 0 (not satisfied) to 10 (very satisfied), respond with 0, 1 or 2. In addition to this subjective indicator, we have included a more objective variable MISS which counts the number of work days an individual missed due to sickness between January and June 1990.

2 Statistical Yearbook for East Germany 1990.

The continuous variable OVERTIME depicts hours of overtime in the previous month. Working overtime is an indication of a relatively healthy firm faced with a high demand or of a subjective indication that the worker is important to his firm. We do not include wages nor premiums paid by the firms in our empirical study for East Germany because the wage structure was barely differentiated and premiums were not based on performance at the time of the survey.

The current job position in the firm is defined by three dummy variables: skilled workers (SKILLED), a master in trade (MASTER) and managers (MANAGER). The unskilled and semi-skilled workers serve as reference category.

TENURE renders the number of years the individual has worked at the present firm and indicates the individual's degree of experience, reliability, firm-specific knowledge and awaited seniority. With widespread job reductions, individuals having worked many years at the same firm could expect to be the last ones laid off.

WEST represents household members that have close relatives or friends in West Germany and have recently received regular support or presents from them. This additional qualification guarantees that the relationships are still active, i.e. that a regular information flow exists.

As indicators on outlook on life, L we use CONFUSED, which equals one if the response to the phrase "The situation has become so complicated that I cannot find my way through it" is "definitely agree" and/or if the response to the question "How worried are you about adapting to the new circumstances" is "very worried". Furthermore dummy variables for the new states allow for regional aspects as proxies of otherwise unobserved indicators of which only Thüringen (THUERING), and Sachsen (SACHSEN) are reported.

The East German society has been caught in a rapid process of change since the fall of the Berlin wall on Nov. 9, 1989, which has thus led to large swings in public opinion in short periods of time. The euphoric mood found immediately after the opening up to the West soon gave way to a more realistic point of view. July 1, the day of the EMSU is plausibly a date separating expectations, for we would assume labour market expectations to be more pessimistic after this date. The variable JULY equals one for those who responded to the survey in July, i.e. after the EMSU. Furthermore, DAYS measures how many days the interview was before (or after) July 1.

As indicators of possibly different information sets we consider two age dummies (age older than 45, AGE_45, age younger than 30 mean: 0.272), the existence of a telephone in the household (23.2% persons in our sample lived in households with telephone), reception of West German TV stations (mean: 0.942), a high level of social activity (mean: 0.319) and the two highest levels of school education in East Germany: the university entrance qualification (ABITUR) and the high school degree after 10th grade (mean: 0.542). These indicators signal the ability of interpreting information and the process of selective perception.

Table 1 General Data Description (standard deviation only for non-dummy variables)

Symbol	Description	Mean	Std. dev.
S Information Sets			
AGE_45	age: older than 45	0.296	
ABITUR	university entrance qualification	0.151	
X_1 Situation of the Firm			
OLDCAPT	industries with old capital	0.137	
AGRICULT	agriculture, fishing	0.132	
CONSTRUC	construction	0.072	
UTIL	energy, water	0.021	
TRADE	trade	0.087	
TRANSPO	transportation	0.081	
SERVICE	services	0.207	
PUBLIC	public services	0.071	
ABISERV	ABITUR * SERVICE	0.052	
CIVSERV	job in the public sector as seen by the individual	0.346	
SMALL	firm size: less than 20 employees	0.096	
LAYOFFS	job layoffs in the firm already taken place or announced	0.472	
FIRED	worker already layed off	0.046	
TEMP	temporary work contract	0.040	
HIPOLL	high pollution sectors	0.134	
HIPOLL_45	HIPOLL * AGE_45	0.045	
X_2 Individual Situation			
AGE	age	37.988	10.057
FEMALE	female	0.489	
FEMALE_45	FEMALE * AGE_45	0.140	
ILL	illness	0.053	0.225
MISS	working days missed due to illness	5.100	13.893
OVERTIME	overtime last month in hours	6.650	13.008
SKILLED	skilled worker	0.545	
MASTER	master of a trade/ foremen	0.068	
MANAGER	manager	0.202	
TENURE	years spent at the firm	12.045	9.679
TENURE_LN	natural log of TENURE	1.974	0.884
TENURE_45	TENURE * AGE_45	5.881	10.784
WEST	intensive personal contact to West Germans	0.226	
WEST_45	WEST * AGE_45	0.062	
L Outlook on Life, Public Moods			
CONFUSED	distorted through the circumstances	0.117	
JULY	date of interview: after 1. July 1990	0.025	
DAYS	time before or after 1. July in days	14.381	7.652
DAYS_45	DAYS * AGE_45	4.182	7.616
THUERING	Thueringen	0.173	
SACHSEN	Sachsen	0.288	

With the numerous variables in X_1 and X_2, we end up with a large number of regressors from the 5 information sets that have to be explained by the data. We assume a priori that all information sets interact with the variables in X_1 and X_2.

The discrimination of the empirical variables to the groups of our model is not always possible without ambiguity and has therefore to be decided by the researcher. So the German states may belong to X_1, X_2 or to L.

4 The Econometric Model

4.1 Estimation

The restrictive assumptions discussed in the previous section allow us to write the basic latent model in the following linear form:

$$y_i^* = V_i\theta + u_i \qquad i = 1,\ldots,N, \tag{4.1}$$

where y_i^* represents the latent, endogenous variable, V_i the $N \times K$ dimensional vector of exogenous variables without a constant, and u_i the error term, which we assume to be independently logistically distributed. However, we can only observe y_i as:

$$y_i = \begin{cases} 1 & \text{iff} \quad c_0 < y_i^* \le c_1 \\ 2 & \text{iff} \quad c_1 < y_i^* \le c_2 \\ 3 & \text{iff} \quad c_2 < y_i^* \le c_3 \\ 4 & \text{iff} \quad c_3 < y_i^* \le c_4. \end{cases} \tag{4.2}$$

$c = (c_0,\ldots,c_4)'$ is a vector of unobserved bounds identical for all observations. Because of the ordinal structure of the model, not all parameters (c, θ, σ) can be identified. The following normalization is chosen: $c_0 = -\infty, c_4 = +\infty, \sigma^2 = \frac{\pi^2}{3}$, and the coefficient of the constant equals zero.[3] Because of the global concavity of the log-likelihood function, Maximum Likelihood estimation is easy to perform and discussed e.g. by Maddala (1983).

3 Note that this is identical to setting another bound to zero and estimating the constant, as is usually done with binary logit models.

4.2 Inference

Specification tests become a necessity since these types of models require very strong stochastic assumptions, e. g., on the distribution of u_i and linearity, without which the parameter estimations usually turn inconsistent. Lagrange-Multiplier (LM) tests, which are described in detail for the binary case in our previous work,[4] are constructed for the ordered logit model, which have not been applied in the literature in the context of ordered logit models.

As with the estimator of the covariance matrix, we also use the more robust versions of the LM-tests suggested by White (1982). In order to test for the functional form or against omitted explaining variables, higher polynomials and logarithms of positive continuous regressors as well as the potential omitted variables (if observed) are included in V. We test the null hypothesis whether the additional coefficients are individually or jointly equal to zero.

The following latent model is specified to test for homoscedasticity:

$$y_i^{**} = V_i\theta + \tilde{u}_i \qquad \text{with} \quad \tilde{\sigma}_i = \sigma\exp(Z_i\psi). \tag{4.3}$$

Z_i contains variables that potentially account for the variable variance. Z_i can, but need not, consist of elements already in X_i. ψ is a coefficient vector. (4.3) is observationally equivalent to:

$$y_i^{**} = V_i\theta/\exp(Z_i\psi) + u_i \qquad \text{with} \quad \sigma_i = \sigma. \tag{4.4}$$

We test the null hypothesis of all elements of the coefficient vector ψ being equal to zero. Since the model of (4.4) is only evaluated under the null, it is equivalent to various other specifications of heteroscedasticity.

To test the distributional assumption the Burr(II) distribution with the following c.d.f. is an attractive alternative, since it nests the logistic distribution and allows a deviation from symmetry in both directions:

$$G(v) = \frac{1}{[1+\exp(-v)]^{\alpha}} \qquad \alpha > 0. \tag{4.5}$$

Under the null of an ordered logit model, α is equal to one. To obtain a more general specification test, we also perform joint tests of the hypothesis of homoscedasticity and the logistic distribution.

It is an interesting question whether the transformation of the latent model into the observed model is correct. First, it is questionable whether people mean what they say. For example, do they perceive the difference between "probably" and "definitely"? A grouping that is coarser than the observed one may be correct. This may lead to

4 Laisney et al. (1991) or Lechner (1991).

inconsistent estimates of the parameters of interest. Second it is possible that people have no opinion to a question concerning their future job loss. See Ronning (1990), for an elaboration of this idea in the context of business surveys.

One can use the Hausman principle to test the grouping. We specify the null to be the finer grouping and the alternative to be the coarser one. Under the null, both estimators, one using the information of the finer grouping and the other using information of the coarser one, will be consistent, but only the first one will be asymptotically efficient. Under the alternative, only the latter remains consistent. Hence, the difference between the estimates can be used to form a Hausman test statistics. This idea has been used in a similar context but different estimation framework by Blundell et al. (1991), when testing the quality of the hours information in a labour supply model.

5 Estimation and Test Results

5.1 Estimation Results

In the first step, theoretically relevant but empirically insignificant regressors are detected by estimating and testing against omitted variables. At this point, we do not yet include the previously described information indicators. The insignificant regressors are not used in the next step. In the second step we test whether the coefficients for the different information sets are constant. The relevant coefficient variations that result are included in the estimation of the third step. To arrive at an efficient estimation, we then exclude all regressors that have a high probability of rejecting the null hypothesis ($\theta = 0$), even if it is correct. At this point, we choose a level of significance of 20%.

Table 2 presents the estimates, t-values, the levels of significance, actual and estimated responses and summary statistics for the final ordered logit model.[5] Given the sample size and the configuration of the variables, we regard a significance level of less than 1% as well determined while the values between 1% and 10% are only weakly determined. The coefficients of the estimated model are interpreted as follows. A positive coefficient indicates that the variable has a positive effect on job expectations, i.e. the subjective probability of losing one's job is smaller. In the context of estimated coefficients, the coefficients for the bounds hint at the strength of the impact of one variable.

A general result is that most of our information indicators are statistically insignificant. Specifically, the factors telephone, West German TV and active participation in the community prove to be unimportant. A measurable information effect is first due to ABITUR in conjunction with the service sector (ABISERV). Secondly and more important, there is an age effect for those over 45 (AGE_45) in conjunction with sex (FEMALE_45), intensive contacts to West Germany (WEST_45), the date of the interview (DAYS_45), the length of employment at one firm (TENURE_45) and the

5 We also estimated the ordered probit model, but the results are not different.

environmental pollution in various sectors (HIPOLL_45). Beyond this, we conclude that shortly before the EMSU the information set was quite homogenous for most of the individuals in East Germany and for most of the variables considered. In other words, it seems that there was a relatively high consensus of opinion on expectations of job layoffs in the East German society.

The sectoral information about the firm is important. Although the variables indicating future growth or decline in job numbers are insignificant, the division of sectors into aggregate categories on the one-digit level is relevant. We conclude that most individuals only recognize these aggregate categories. For example, they observe that their firm belongs to the production industry but disregard the subdivision into, for example, metal or wood industry. All significant coefficients of the sectors and hence the effects on expectations are positive, compared to the "new" capital industry. The influence of work in trade, construction and transportation is positive, and this seems reasonable because these sectors will profit from the start.

The information indicator ABITUR is important with respect to the service sector, although the coefficient of the service sector itself is insignificant. Individuals with a university entrance qualification in the service sector (ABISERV) believe that they are less prone to being fired. We conclude that these individuals have a more realistic view of their future than other individuals because they recognize that this sector promises rapid future growth (see Görzig and Gornig, 1991).

Membership to the public sector, CIVSERV, has a positive yet poorly significant coefficient. Although employment in the public sector is much higher in former East Germany than in West Germany the positive effect may stem from political promises made during the reunification process.

Interestingly, the workers recognized the future prospects of the small firm sector, long neglected in the socialist planning ideology. For workers in small firms (SMALL) relative to all other employment sizes, the loss of one's job is less likely.

Environmental pollution plays no role in job expectations for those under age 45. The coefficients of the regional and sectoral pollution variables are individually and jointly insignificant; however, the sectoral pollution plays a negative role for workers over 45 (HIPOLL_45). This could indicate that only older individuals recognize the impact of environmental pollution and its effect on their job. The coefficients of THUERING and SACHSEN are positive and statistically well determined although pollution in these states is high. The fact that they are industrialized and not that they are polluted might explain the relative optimism we observe here. Last, positive expectations may be based on a certain outlook on life inherent to these regions which we cannot capture otherwise with our data.

The estimated impacts of LAYOFFS and FIRED are negative and highly significant. Of course, if the firm has already announced that it will lay off an individual, it relays information with near certainty.[7] There is no other variable with a comparable impact,

7 Note however that a change in ownership of the firm might revoke announced lay-offs.

Table 2 Estimation Results for the Ordered Logit; Actual and Estimated Responses; Summary Statistics

Variable	Coefficient	t-statistic[6]	p-value in %
OLDCAPT	0.283	2.04	4.11
AGRICULT	-0.169	-1.15	24.88
CONSTRUC	0.650	3.58	0.03
UTIL	0.597	2.06	3.94
TRADE	0.569	3.39	0.07
TRANSPO	0.760	3.54	0.04
SERVICE	0.228	1.17	24.20
PUBLIC	0.335	1.37	16.84
ABISERV	0.489	2.52	1.14
CIVSERV	0.332	2.15	3.15
SMALL	0.661	4.44	0.00
LAYOFFS	-0.567	-6.47	0.00
FIRED	-3.527	-14.60	0.00
TEMP	-0.550	-2.46	1.38
HIPOLL_45	-0.432	-2.07	3.81
FEMALE	-0.440	-4.30	0.00
FEMALE_45	0.366	2.24	2.45
ILL	-0.362	-1.87	6.02
MISS	-0.004	-1.88	5.95
OVERTIME	0.009	2.78	0.53
SKILLED	0.289	2.54	1.09
MASTER	0.668	3.46	0.05
MANAGER	0.164	1.14	25.09
TENURE	0.059	4.28	0.00
TENURE_LN	-0.325	-3.40	0.06
TENURE_45	-0.021	-2.52	1.17
WEST_45	0.474	2.70	0.69
CONFUSED	-0.236	-1.84	6.48
JULY	-0.854	-3.47	0.05
DAYS_45	-0.025	-3.23	0.12
THUERING	0.357	3.20	0.13
SACHSEN	0.378	4.01	0.00
1. bound	-3.265	(0.21)	
2. bound	0.128	(0.18)	
3. bound	2.492	(0.19)	

responses	definitely (1)	probably (2)	probably not (3)	definitely not (4)
actual	157	916	1069	260
estimated	92	737	1571	2

correct predictions: 54.87%; 2402 observations, d.o.f.: 2370, -log likelihood: 2426.17; likelihood ratio test ($\theta = 0, c \neq 0$): $\chi^2 = 657.35$, d.o.f.: 32

6 Standard errors of the bounds in parenthesis.

and this seems reasonable. In a firm that has recently laid off workers, the workers remaining have more negative expectations than those working in firms without layoffs. This phenomenon is well known in psychology (see e.g. Van den Abeele, 1988). The general knowledge of rising unemployment does not carry the same weight as the direct and personal confrontation with job reductions at the firm in which the individual works.

Both health indicators, standing for bad human capital are only weakly determined but have the expected negative sign. The more subjective variable ILL might also be an indicator of pessimism or optimism. The variable MISS may contain personal information on long-term illness that will lead to the person leaving the labour force in the near future.

The effect of seniority is well determined. It is non-linear and interacts with age (see the coefficients of TENURE, TENURE_LN[8] and TENURE_45). Disregarding the age-effect for the moment, we observe a positive value for one year, negative values between two and fourteen years (with a minimum at 5.5 years) and positive values thereafter. Workers with long experience are more optimistic with the exception of older workers. The interaction (TENURE_45) shifts the minimum to 8.5, and only one year gives a positive impact.

The level of training when tested individually and groupwise does not affect expectations. The position in the firm, however, is of importance. Compared to unskilled workers and those trained on the job, the skilled workers, the foremen or masters and the highly qualified employees, e.g. managers and directors, are more optimistic about keeping their jobs. Especially foremen are convinced that their job opportunities on the labour market are favourable. The highly qualified employees are an exception. Even though the relevant coefficient is positive, it is statistically not determined. In contrast to the foremen, whose training can easily be used in a market economy, the know-how of the highly qualified employees in socialist planning and decision making may prove to be useless in a market economy.

Women have more negative job expectations than men. This effect is relatively high and statistically well determined. The expectations of women over age 45 (FEMALE_45) are not as negative. This is astonishing because we controlled for variables representing the composition of the household, especially the number of children under age 16, 10, 7 and 3 and whether the woman is raising her children alone. They proved to be statistically insignificant.

An interesting but not easily explained phenomenon is the positive and well determined coefficient of WEST_45. Having relatives in the West is irrelevant. However, for individuals over 45, this intensive contact is important and positive. They may believe that they have a particular type of human capital which is valuable to their employer, which is hardly convincing from our point of view.

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8 We chose the ln-transformation instead of squares or cubes since the tests against omitted variables show that TENURE_LN is missing, but not any other transformation.

The size of the community has no effect and the religious affiliation is also unimportant for expected job loss. The indicator of individual pessimism and distortion (CONFUSED) has a negative sign, but it is badly determined.

The negative coefficient of JULY suggests that the public mood became worse after the EMSU. This is an indication of the dynamic nature of expectations during this period of drastic social change. However, since the number of interviews conducted after July 1 is only 60 out of 2402, this result has to be interpreted with caution. The high negative value of JULY is made more relative by considering the negative and also determined coefficient of the variable DAYS_45. It says that the expectations of those over 45 became more positive during the process of the EMSU. Since most interviews were conducted before the EMSU, this is not necessarily a contradiction of JULY. The optimism of this group might stem from the fact that their savings were changed into West German Mark.

The LM-Multiplier tests of the functional form show that there are no more non-linearities than those already mentioned. correct nonlinear form of the tenure effect is TENURE_LN. Furthermore we tested many possible influences on expectations, that were insignificant in the final model. The complete list of results can be found in Lechner et al. (1991).

5.2 Tests against Heteroscedasticity and Logistic Distribution

The specification of the columns of the matrix Z of equation (4.3) is important for testing against heteroscedasticity in order to obtain maximum power against desired alternatives. We place all exogenous variables, whether they enter the final estimation or not, first individually, then in corresponding groups, in Z and test the null hypothesis that the coefficient vector γ is equal to zero. Since all these tests don't reveal any problem, we refrain from presenting them for the sake brevity.

With the test of the distributional assumption of the Logit, the null hypothesis is not rejected. The joint tests against the distributional specification and heteroscedasticity give virtually the same results as the test against heteroscedasticity, which is hardly surprising, given the small values of the χ^2 for the distribution statistic.[9] To conclude, our diagnostics, up to now, do not cast any doubt on our estimation.

9 The complete results are presented in Lechner et al. (1991).

5.3 Hausman Tests

Table 3 presents the Hausman tests for the correct perception of the endogenous variable. The first part of the table consists of testing our four-group model against all possible and feasible aggregations of the groups. The left hand column of the table gives the groups which were aggregated. We find that rejection of our four-group model is severe. It is most pronounced when the coarsest alternative, the binary model, is used. This also happens when we test the two three group models against the binary one. Thus, only the binary model survives, which is not tested any further.

Nevertheless, since this is the first application of this test procedure, the results have to be treated with some care until an investigation in the finite sample properties of the tests has been conducted. When using the whole set of coefficients, it is a well known problem that the variance estimate of the difference may not necessarily be positive definite in Hausman tests. Therefore, we delete negative and small positive eigenvalues.[10] Furthermore, we can include, or exclude, comparable bounds to compute the statistic. The numbers presented include these bounds, but again the result is robust against excluding them.

Table 3 Hausman-Tests for Endogenous Specification

Model	χ^2	D.o.f	p-value in %
a) H^0: four groups; H^1: aggregate of groups			
[1 2] 3 4	75.95	29	0.0004
1 [2 3] 4	54.68	31	0.5415
1 2 [3 4]	58.86	28	0.0567
[1 2] [3 4] [11]	126.00	31	0.0000
b) H^0: three groups as aggregates of ...; H^1: binary model			
[1 2] 3 4	72.34	28	0.0008
1 2 [3 4]	154.56	30	0.0000

10 The presented numbers are based on eigenvalues larger than 10^{-8}, but the results are robust against using smaller and larger values.

11 Due to the constellation of the variables, it is only possible to estimate a binary model which aggregates the two lower and the two upper categories.

Since the results of the Hausman tests suggest possible inconsistencies of our estimation, we also estimated a binary version of the model, for which the reader is again referred to Lechner et al. (1991). All our basic results survive. To be sure we do not know whether the binary model is the right one. So far, we only know that the ordered logit is may be inconsistent, or our Hausman test statistic is badly approximated by its asymptotic distribution. The latter point deserves further investigation. But if there is a problem, it seems to have only a minor impact.

6 Conclusions

The results provide evidence of "reasonable" expectations concerning the future event of job loss in the summer of 1990. Even after 40 years of socialism, the population has retained a market-oriented way of thinking. This line of thought could not, of course, develop productively within the socialist framework or in the limited shadow economy. The surprising result is not rejected when testing the basic underlying statistical assumption with diagnostic tests.

The results of the new Hausman tests cast some doubt on the transformation of the latent model to a four group ordinal model being the correct one. Nevertheless, all our basic results remain valid even if we suppose that individuals did not differentiate between the extreme and the middle categories.

Many interesting questions remain unanswered because we could not model them with the data at hand. The future analysis of the second wave of the East-survey will allow us to model not only the existence of the expectations themselves but also the dynamic formation of expectations and possible learning processes. Presently, we have described the initial phase of the transformation of the former German Democratic Republic from a centrally planned economy to a market economy. In the future, it will be most interesting to analyse all changes happening during this unique process, which could not be observed before. An interesting exercise left for future research is to check whether the influence of the determinants of human capital remain constant.

Although the conclusions are optimistic, our work is no proof that the East Germans are willing to take the personal risks inherent to the market economy. It is not at all clear how long it will take to adapt to the new circumstances after having lived without the personal risk of unemployment in a socialist society for 40 years. In the context of modernizing underdeveloped economies, these questions have been discussed by Hirschman (1965) and might also be relevant for the transformation of a central planning economy to a market system. A. O. Hirschmann concluded that values adopted in a long learning process are hard to change and this might lead to a "more halting and circuitous" development path and that the "typical personality may well be subject to particularly strong tension between traditional and modern values".[12] We believe that this tension is reflected in our estimates.

12 Hirschman (1965), p. 393.

Bibliography

Akerlof GA, AK Rose, JL Yellen and H Hesenius (1991) East Germany in from the Cold: The Economic Aftermath of Currency Union. Brookings Papers on Economic Activity, 1, 1-105

Bethkenhagen J, R Hopf, M Melzer, C Schwartau and D Cornelsen (1988) SO_2- und NO_x-Emissionen in der DDR 1982. DIW, Beiträge zur Strukturforschung, Heft 102, Berlin, Duncker und Humblot

Blundell R, F Laisney, and M Lechner (1991) Alternative Interpretions of Hours Information in an Econometric Model of Labour Supply. Disc. Paper No. 91-01, Zentrum für Europäische Wirtschaftsforschung

Hey SD (1984) The Economics of Optimism and Pessimism. Kyklos 37, Fasc. 2: 181-205

Hirschman AO (1965) Obstacles to Development: A Classification and a Quasi-Vanishing Act. Economic Development and Cultural Change 13, 4, Part 1: 385-393

Holden K, DA Peel and SL Thompson (1985) Expectations: Theory and Evidence. Houndmills: Macmillan

Laisney F, M Lechner and S Strøm (1991) Lessons from Specification Tests for a Labour Supply Model. Annales d'Économie et Statistique, 20/21: 193-217

Lechner M (1991) Testing Logit Models in Practice. Empirical Economics, 16: 177-198

Lechner M, F Pfeiffer and L Giesecke-O'Shea (1991) Expected Job Loss in East and West Germany 1990/89 - an Econometric Analysis Using Individual Data of the Socio-Economic Panel. Beiträge zur Angewandten Wirtschaftsforschung, Disc. Paper No. 447-91, University of Mannheim

Lechner M, F Pfeiffer and G Wagner (1991) Die Arbeitsmarkterwartungen in der DDR kurz vor der Währungsunion. Vierteljahreshefte zur Wirtschaftsforschung, (1-2): 39-49

Lovell MC (1986) Tests of the Rational Expectations Hypothesis. American Economic Review 76, 1: 110-124

Low W, J McIntosh and F Schiantarelli (1990) What Can We Learn about Firms' Output, Employment and Pricing Decisions from Business Surveys? Some Evidence for UK Companies. In: JP Florens, M Ivaldi, JJ Laffent and F Laisney (eds), Microeconometrics: Surveys and Applications. Oxford, Basis Blackwell

Maddala GS (1983) Limited-dependent and Qualitative Variables in Econometrics. Cambridge, Cambridge University Press

Projektgruppe Panel (1990) Das Sozio-ökonomische Panel für die Bundesrepublik Deutschland nach fünf Wellen. Vierteljahrshefte zur Wirtschaftsforschung, (2-3): 141-151

Ronning G (1990) The Informational Content of Responses from Business Surveys. In: JP Florens, M Ivaldi, JJ Laffont and F Laisney (eds), Microeconometrics: Surveys and Applications. Oxford, Basil Blackwell, 123-144

Schupp J and G Wagner (1990) Die DDR-Basisbefragung des Sozio-ökonomischen Panels. Vierteljahrshefte zur Wirtschaftsforschung: 152-159.

Sinn G and HW Sinn (1991) Kaltstart: Volkswirtschaftliche Aspekte der deutschen Wiedervereinigung. Tübingen, Mohr.

Van Raaij FW (1989) Economic News, Expectations and Macro-Economic Behaviour. Journal of Economic Psychology 10: 473-493.

Van den Abeele P (1988) Economic Agents' Expectations in a Psychological Perspective. In: FW van Raaij, GM van Veldhoven and KE Wärneryd (eds), Handbook of Economics. Dordrecht, Kluwer, 478-515

Windsperger J (1988) Erwartungen und ökonomische Theoriebildung: Grundlegung einer Theorie der Erwartungsbildung und deren Anwendung auf die Keynes'sche Theorie. Berlin, Duncker und Humblot

White H (1982) Maximum Likelihood Estimation of Misspecified Models. Econometrica 50: 1-25